

REMARKS/ARGUMENTS

Claims 9-22 were pending in the present application. The present response amends claims 9, 15, 18, 19, and 22, leaving pending in the application claims 9-22. Reconsideration of the rejected claims is respectfully requested.

I. Rejection under 35 U.S.C. §112

Claims 9-21 are rejected under 35 U.S.C. §112, first and second paragraphs, as failing to comply with the written description requirement and being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Particularly, language in the claims referring to the epoxy compound including at least one light absorbing material is rejected as being imprecise. Applicants appreciate the Examiner's helpful suggestions, and have amended independent claims 9, 15, and 19 to mirror the language of claim 22, in order to clarify that the light containing material is included in the thermally curable epoxide layer. As such, the language in claims 9, 15, and 19 should be sufficiently definite and the written description requirement should be satisfied. Applicants therefore respectfully request that the rejection with respect to claims 9-21 be withdrawn.

II. Rejection under 35 U.S.C. §103**(a) Schoen, Gelbart, and Brunner**

Claims 9-11 and 13-22 are rejected under 35 U.S.C. §103(a) as being obvious over *Schoen* (US 5,242,715) in view of *Gelbart* (US 6,214,276) and further in view of *Brunner* (DE 19640006).

Claim 9 requires a method of encapsulating an electronic component supported on a substrate, defined by:

depositing a thermally curable epoxide layer on the electronic component, the epoxide layer including therein at least one light absorbing material; and
directing laser radiation having a wavelength between about 600 and 1000 nm onto the thermally curable epoxide layer for a time period sufficient that the light absorbing material absorbs a portion of the laser radiation and generates heat in the layer, whereby the epoxide layer is cured without external heating.

(emphasis added). Such limitations are not rendered obvious by *Schoen*, *Gelbart*, and *Brunner*.

Schoen teaches a process whereby “reaction resin mixtures are hardened both through UV radiation and also thermally,” where the “thermal hardening takes place advantageously at temperatures from 80° to 200° C.; preferably at temperatures from 80° to 150° C” (col. 3, lines 33-39). *Schoen* uses a combined process because UV-hardenable epoxy resins “find only limited application in the electronics field” due to “areas that are shaded from light” and inadequate intensity in “deeper layers,” while thermally-hardened epoxy processes alone have problems with “uneven layer thicknesses,” can observe “undesirable deliquescence” of the resin drop contour, and are “time- and space-intensive” (col. 1, line 12-col. 2, line 27). *Schoen* does not teach a process whereby laser radiation having a wavelength between about 600 and 1000 nm is directed onto a thermally curable epoxide layer on the electronic component, including at least one light absorbing material, whereby the light absorbing material absorbs a portion of the laser radiation and generates heat in the layer such that the epoxide layer is cured without external heating as required by Applicants’ claim 9. As discussed, *Schoen* instead teaches a combined process which uses UV light instead of light between about 600 and 1000 nm, and requires external heating to heat the resin to 80° to 200° C. As such, *Schoen* cannot render claim 9 obvious.

Gelbart does not make up for these deficiencies in *Schoen*. *Gelbart* teaches the generation of three-dimensional objects “by imaging a liquid resin” with a laser whereby the irradiated, thermosensitive portion of the resin “gets sufficiently hot to polymerize” (col. 1, lines 13-17; col. 2, lines 23-41; col. 3, lines 14-16). As such, *Gelbart* is non-analogous prior art and there would be no motivation to combine the object generation process of *Gelbart* with the combined curing process of *Schoen*. Further, even if *Gelbart* were to be combined with *Schoen*, the process would not meet the requirements of Applicants’ claim 9. As discussed above, *Schoen* states that a thermal process alone is not sufficient for coating or bonding electronic components. As such, it is not obvious that the laser-induced thermal heating process of *Gelbart* could be used with any likelihood of success to encapsulate an electronic component without also using a UV-hardenable epoxy resin as taught by *Schoen*. Further, as *Schoen* discusses the problems of UV-hardenable epoxy resins when coating or bonding electronic components, it would not be obvious that the laser-induced thermal process of *Gelbart* using light at 800-1200 nm would be successful to encapsulate an electronic component without external heating to heat

the component to 80° to 200° C. As such, *Gelbart* cannot render claim 9 obvious, either alone or in combination with *Schoen*.

Brunner does not make up for the deficiencies in *Gelbart* and *Schoen* with respect to claim 9. *Brunner* teaches using a light-hardenable plastic, the use of which is intended to avoid a thermal process as required by Applicants' claim 9 by using material hardened by electromagnetic radiation (see translation p. 2, line 12-page3, line 2). There would then be no motivation to combine *Brunner* with either *Schoen* or *Gelbart*, as each reference requires a thermal process as discussed above. Even if the references were combined, there is no suggestion in any of the references that the single light-absorbing plastic process of *Brunner* would not also require the external heating of *Schoen* as discussed above. Further, there is no teaching or suggestion that the object generation process of *Gelbart* would work to seal a printed circuit board as discussed in *Brunner*, and in fact *Schoen* would indicate that such a process would in fact not be sufficient without external heating. As such, claim 9 cannot be rendered obvious by *Schoen*, *Gelbart*, and *Brunner*, either alone or in any combination.

Claims 15, 19, and 22 recite similar limitations which are neither taught nor suggested by *Schoen*, *Gelbart*, and *Brunner*, either alone or in any combination, for reasons including those discussed above, and as such should not be rendered obvious. Claims 10-11, 13-14, 16-18, and 20-21 depend from these claims and also should not be rendered obvious. Applicants therefore respectfully request that the rejection with respect to claims 9-11 and 13-22 be withdrawn.

(b) *Schoen, Gelbart, Brunner, and Busman*

Claim 12 is rejected under 35 U.S.C. §103(a) as being obvious over *Schoen* in view of *Gelbart* and further in view of *Brunner* and *Busman* (US 5,756,689). Claim 12 depends from claim 9, which is not rendered obvious by *Schoen*, *Gelbart*, and *Brunner* for reasons including those discussed above. *Busman* does not make up for the deficiencies in these references with respect to claim 9, as *Busman* is cited only as teaching "use of metal particulates" in encapsulating material (4/26/2004 OA pp. 7-8; col. 1, lines 16-30). Such teaching would not make up for the deficiencies in these references with respect to claim 9. Further, *Busman* is directed to laser induced thermal imaging, and as such is non-analogous prior art. As such, *Busman* cannot render obvious claim 9, and dependent claim 12, either alone or in combination with *Schoen*, *Gelbart*, and *Brunner*. Applicants therefore respectfully request that the rejection with respect to claim 12 be withdrawn.

III. Amendment to the Claims

Unless otherwise specified, amendments to the claims are made for purposes of clarity, and are not intended to alter the scope of the claims or limit any equivalents thereof. The amendments are supported by the specification and do not add new matter to the specification.

IV. Conclusion

In view of the above, it is respectfully submitted that the application is now in condition for allowance. Reconsideration of the pending claims and a notice of allowance is respectfully requested.

The Commissioner is hereby authorized to charge any deficiency in the fees filed, asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 50-1703, under Order No. COHD-4540. **A duplicate copy of the transmittal cover sheet attached to this Response to Office Action Mailed October 22, 2004, is provided herewith.**

Respectfully submitted,

STALLMAN & POLLOCK LLP

Dated: December 3, 2004

By: 

Michael A. Stallman
Reg. No. 29,444

Attorneys for Applicant(s)